

DRILLED SOLDIER PILE RETAINING WALL

Effective: September 20, 2001

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Description. This work shall consist of providing all labor, materials, and equipment necessary to fabricate and furnish the soldier piles, create and maintain the shaft excavations, set and brace the soldier piles into position and encase the soldier piles in concrete to the specified elevation. Also included in this work is the backfilling of the remainder of the shaft excavation with Controlled Low-Strength Material (CLSM), the furnishing and installation of the timber lagging, and the furnishing and installation of CLSM secant lagging. All work shall be according to the details shown on the plans and as directed by the Engineer.

The remainder of the retaining wall components as shown on the plans, such as concrete facing, shear studs, reinforcement bars, tie backs, hand rails, and various drainage items etc., are not included in this Special Provision but are paid for as specified elsewhere in this Contract.

Materials. The materials used for the soldier piles and lagging shall satisfy the following requirements:

- (a) The structural steel components for the soldier piles shall conform to the requirements of AASHTO M270, Grade 250 (36), unless otherwise designated on the plans.
- (b) The soldier pile encasement concrete shall be portland cement concrete according to Section 1020, except the mix design shall be as follows:
 - (1) A Type I or II cement shall be used at 360 kg/cu m (605 lb/cu yd). When the plans specify that soil and ground water sulfate contaminates exceed 500 parts per million, a Type V cement shall be required. The cement shall be increased 35 kg/cu m (60 lb/cu yd) if the concrete is to be placed underwater.
 - (2) Class C or F fly ash may replace Type I or II cement. The cement replacement shall not exceed 15 percent by mass (weight) at a minimum replacement ratio of 1.5:1. The fly ash shall not be used in combination with ground granulated blast-furnace slag.
 - (3) Grade 100 or 120 ground granulated blast-furnace slag may replace Type I or II cement. The cement replacement shall not exceed 25 percent by mass (weight) at a minimum replacement ratio of 1:1. The ground granulated blast-furnace slag shall not be used in combination with fly ash.
 - (4) The maximum water/cement ratio shall be 0.44.
 - (5) The mortar factor shall be a value which produces a coarse aggregate content comprising between 55 and 65 percent of total aggregate by mass (weight).

- (6) The slump at point of placement shall be $175 \text{ mm} \pm 25 \text{ mm}$ ($7 \pm 1 \text{ in.}$). If concrete is placed to displace drilling fluid or against temporary casing, the slump shall be $200 \text{ mm} \pm 25 \text{ mm}$ ($8 \pm 1 \text{ in.}$) at point of placement. The concrete mix shall be designed to remain fluid throughout the anticipated duration of the pour plus 1 hour.
 - (7) An air entraining admixture shall be required and the air content range shall be 4.0 to 7.0 percent.
 - (8) The minimum compressive strength shall be 27,500 kPa (4000 psi) at 14 days. The minimum flexural strength shall be 4,650 kPa (675 psi) at 14 days.
 - (9) A retarding admixture shall be required.
 - (10) A water-reducing or high range water-reducing admixture shall be required.
 - (11) An accelerating admixture may be used with the permission of the Engineer in extraordinary situations.
 - (12) The coarse aggregate shall be CA 13, CA 14, CA 16 or a blend of these gradations. The fine aggregate shall consist of washed sand only.
- (c) The Controlled Low-Strength Material (CLSM), used for backfilling shaft excavations above the soldier pile encasement concrete and for backfilling secant lagging excavations, to the existing ground surface, shall be according to the Recurring Special Provisions for CLSM.
- (d) Temporary casing shall be produced by electric seam, butt, or spiral welding to produce a smooth wall surface, fabricated from steel satisfying ASTM A252 Grade 2. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 6 mm ($1/4 \text{ in.}$).
- (e) Drilling slurry shall consist of a polymer or mineral base material. Mineral slurry shall have both a mineral grain size that will remain in suspension with sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. For polymer slurry, the calcium hardness of the mixing water shall not exceed 100 mg/L.
- (f) Timber Lagging. The minimum tabulated unit stress in bending (F_b), used for the design of the timber lagging, shall be 6.9 MPa (1000 psi) unless otherwise specified on the plans. When treated timber lagging is specified on the plans, the method of treatment shall be according to Article 1007.12.

Equipment. The drilling equipment shall have adequate capacity, including power, torque and down thrust, to create a shaft excavation of the maximum diameter specified to a depth of 20 percent beyond the depths shown on the plans. Concrete equipment shall be according to Article 1020.03.

Construction Requirements. The shaft excavation for each soldier pile shall extend to the tip elevation indicated on the plans for soldier piles terminating in soil or to the required embedment in rock when rock is indicated on the contract plans. The Contractor shall satisfy the following requirements:

(a) Drilling Methods. The soldier pile installation may involve the use of one or more of the following drilling methods to maintain excavation side wall stability during the various phases of shaft excavation and concrete placement, dependent on the site conditions encountered:

- (1) Dry Method. The dry method consists of drilling the shaft excavation, removing accumulated water and loose material from the excavation, placing the soldier pile and concrete in a predominately dry excavation. This method shall be used only at sites where the groundwater and soil conditions are suitable to permit the drilling and dewatering of the excavation without causing excessive water infiltration, boiling, squeezing, or caving of the excavation side walls. This method allows the concrete placement by tremie or concrete pumps, or if the excavation can be dewatered, the concrete can be placed by free fall.
- (2) Wet Method. The wet construction method may be used at sites where dewatering the excavation would cause collapse of the excavation sidewalls or when the volume and head of water flowing into the shaft excavation is likely to contaminate the concrete during placement. This method uses water or slurry to maintain stability of the shaft perimeter while advancing the excavation. After the excavation is completed, the water level in the shaft is allowed to seek equilibrium, the base is cleaned, the soldier pile is set and the concrete is discharged at the base using a tremie pipe or concrete pump, displacing the drilling fluid upward.
- (3) Temporary Casing Method. Temporary casing shall be used when either the wet or dry methods provide inadequate support to prevent sidewall caving or to ensure there is not excessive deformation of the hole. Temporary casing may also be used to reduce the flow of water into the excavation to allow dewatering, adequate cleaning, or to ensure proper concrete placement.

Temporary casing will not be allowed to remain permanently in place without the approval of the Engineer. Before the temporary casing is broken loose, the level of soldier pile encasement concrete in the casing shall be a minimum of 1.5 m (5 ft) above the bottom of the casing. After being broken loose, and as the casing is withdrawn, additional concrete shall be added to maintain sufficient head so that water and soil trapped behind the casing can be displaced upward and discharged at the ground surface.

No shaft excavation shall be made adjacent to a soldier pile with encasement concrete that has a compressive strength less than 10.35 MPa (1500 psi), nor adjacent to secant lagging until the CLSM has reached sufficient strength to maintain its position and shape unless otherwise approved by the Engineer. Materials removed or generated from the shaft excavations shall be disposed of by the Contractor according to Article 202.03. Excavation by blasting will not be permitted.

- (b) **Drilling Slurry.** During construction, the level of the slurry shall be maintained at a height sufficient to prevent caving of the hole. In the event of a sudden or significant loss of slurry to the hole, the construction of that shaft shall be stopped and the shaft excavation backfilled or supported by temporary casing until a method to stop slurry loss, or an alternate construction procedure, has been developed and approved by the Engineer.
- (c) **Obstructions.** Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations, etc.) that cannot be removed with *normal earth drilling procedures*, but requires special augers, tooling, core barrels or rock augers to remove the obstruction. When obstructions are encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to core, break up, push aside, or remove the obstruction. Lost tools or equipment in the excavation, as a result of the Contractor's operation, shall not be defined as obstructions and shall be removed at the Contractor's expense.
- (d) **Top of Rock.** The actual top of rock will be defined as the point where material is encountered which can not be drilled with a conventional earth auger and/or under-reaming tool, and requires the use of special rock augers, core barrels, air tools or other methods of hand excavation.
- (e) **Design Modifications.** If the top of rock elevation encountered is below that estimated on the plans, such that the soldier pile length above rock is increased by more than 10 percent, the Engineer shall be contacted to determine if any soldier pile design changes are required. In addition, if the type of soil or rock encountered is not similar to that shown in the subsurface exploration data, the Engineer shall be contacted to determine if revisions are necessary.
- (f) **Soldier Pile Fabrication and Placement.** The soldier pile is defined as the structural steel section(s) shown on the plans as well as any connecting plates used to join multiple sections. Cleaning and painting of all steel components, when specified, shall be as shown on the plans and accomplished according to the special provision for "Cleaning and Painting New Metal Structures". This work will not be paid for separately, but shall be considered included in the cost of Furnishing Soldier Piles of the type specified.

The soldier pile shall be shop fabricated such that no field welding is required. The Contractor shall attach suitable bracing or support to maintain the position of the soldier pile within the shaft excavation such that the final location will satisfy the Construction Tolerances portion of this Special Provision. The bracing or supports shall remain in

place until the concrete for encasement has reached a minimum compressive strength of 10.35 MPa (1500 psi).

When embedment in rock is indicated on the plans, modification to the length of a soldier pile may be required to satisfy the required embedment. The modification shall be made to the top of the soldier pile unless otherwise approved by the Engineer. When the top of rock encountered is above the estimated elevation indicated on the plans, the soldier piles shall be cut to the required length. If the top of rock encountered is below that estimated on the plans, the Contractor shall either furnish longer soldier piles or splice on additional length of soldier pile per Article 512.05(b) to satisfy the required embedment in rock. In order to avoid delays, the Contractor may have additional soldier pile sections fabricated as necessary to make the required adjustments. Additional soldier pile quantities, above those shown on the plans, shall not be furnished without prior written approval by the Engineer.

- (g) Concrete Placement. Concrete work shall be performed according to the applicable portions of Section 503 and as specified herein.

The soldier pile encasement concrete pour shall be made in a continuous manner from the bottom of the shaft excavation to the elevation indicated on the plans. Concrete shall be placed as soon as possible after the excavation is completed and the soldier pile is secured in the proper position. Uneven levels of concrete placed in front, behind, and on the sides of the soldier pile shall be minimized to avoid soldier pile movement, and to ensure complete encasement. Concrete shall be placed either by free fall, or through a tremie or concrete pump subject to the following conditions:

- (1) The free fall placement shall only be permitted in shaft excavations that can be dewatered without causing side wall instability and where no more than 75 mm (3 in.) of standing water exists at the time of concrete placement. The maximum height of free fall placement shall not exceed 18.3 m (60 ft.) and the concrete shall be directed to the base to minimize contact with either the soldier pile or the shaft excavation side wall. Drop chutes may be used to direct concrete to the base during free fall placement.
- (2) Tremies shall be according to Article 503.08 and contain no aluminum parts that may have contact with the concrete. The inside and outside surfaces of the tremie shall be clean and smooth to permit both flow of the concrete and unimpeded withdrawal during concrete placement.
- (3) Concrete pumps. Pumps and lines may be used for concrete placement and shall have a minimum 100 mm (4 in.) diameter.

The tremie or pump lines used for wet method concrete placement shall be watertight and shall not begin discharge until placed within 250 mm (10 in.) of the base of the excavation. Valves, bottom plates or plugs may be used only when they can be removed from the excavation unless approved by the Engineer. The discharge end shall be

immersed at least 1.5 m (5 ft.) in concrete at all times after starting the pour.

Following the soldier pile encasement concrete pour, the remaining portion of the shaft excavation shall be backfilled with CLSM.

CLSM Secant lagging placement shall be placed as soon as practical after the shaft excavation is cleared.

(h) Construction Tolerances. The soldier piles shall be drilled and located within the excavation to satisfy the following tolerances:

- (1) The center of the soldier pile shall be within 38 mm (1 1/2 in.) of plan station and 13 mm (1/2 in.) offset at the top of the shaft.
- (2) The out of vertical plumbness of the soldier pile shall not exceed 0.83 percent.
- (3) The top of the soldier pile shall be within ± 25 mm (± 1 in.) of the plan elevation.

(i) Timber Lagging. Timber lagging, when required by the plans, installed below the original ground surface, shall be placed from the top down as the excavation proceeds. Lagging shown above grade shall be installed and backfilled against prior to installing any permanent facing to minimize post construction deflections. Over-excavation required to place the timber lagging behind the flanges of the soldier piles shall be the minimum necessary to install the lagging. When the plans require the Contractor to design the timber lagging, the design shall be based on established practices published in FHWA or AASHTO documents considering lateral earth pressure, construction loading, traffic surcharges and the lagging span length(s). The nominal thickness of the lagging selected shall not be less than 75 mm (3 in.) and shall satisfy the minimum tabulated unit stress in bending (Fb) stated elsewhere in this Special Provision. The Contractor shall be responsible for the successful performance of the lagging system until the concrete facing is installed. When the nominal timber lagging thickness(s) and allowable stress are specified on the plans, the timber shall be rough cut or surfaced and in accordance with Article 1007.03.

(j) Structure Excavation. When structure excavation is necessary to place a concrete facing, it shall be made and paid for according to Section 502 except that the horizontal limits for structure excavation shall be from the face of the soldier pile to a vertical plane 600 mm (2 ft) from the finished face of the wall. The depth shall be from the top of the original ground surface to the bottom of the concrete facing. The additional excavation necessary to place the lagging whether through soil or CLSM shall be included in this work.

(k) Geocomposite Wall Drain. When required by the plans, the geocomposite wall drain shall be installed and paid for according to Section 591 except that, in the case where a concrete facing is specified on the plans, the wall drain shall be installed on the concrete facing side of the timber lagging with the pervious (fabric) side of the drain installed to face the timber. When a concrete facing is not specified on the plans, the pervious (fabric) side of the drain shall be installed to face the soil. In this case, the

drain shall be installed in stages as the timber lagging is installed. The wall drain shall be placed in sections and spliced, or kept on a continuous roll, so that as each timber is placed, the drain can be properly located as the excavation proceeds.

Method of Measurement. The furnishing of soldier piles will be measured for payment in meters (feet) along the centerline of the soldier pile for each of the types specified. The length shall be determined as the difference between the plan top of soldier pile and the final as built shaft excavation bottom.

Drilling and setting soldier piles shall be measured for payment in cubic meters (cubic feet) of the shaft excavation required to set the soldier pile. This volume shall be the theoretical volume computed using the diameter(s) shown on the plans and the length between the as built shaft excavation bottom and the ground surface at the time of concrete placement.

Drilling and placing CLSM secant lagging shall be measured for payment in cubic meters (cubic feet) of the shaft excavation required to install the secant lagging as shown in the plans. This volume shall be the theoretical volume computed using the diameter(s) shown on the plans and the length between the as built shaft excavation bottom and the ground surface at the time of the CLSM placement.

Timber lagging shall be measured for payment in square meters (square feet) of timber lagging installed to the limits as shown on the plans. The quantity shall be calculated using the minimum lagging length required on the plans multiplied by the as installed height of timbers, for each bay of timber lagging spanning between the soldier piles.

Basis of Payment. The furnishing of soldier piles will be paid for at the contract unit price per meter (foot) for FURNISHING SOLDIER PILES, of the type specified, for the total number of meters (feet) furnished to the job site. The cost of any field splices required due to changes in top of rock elevation shall be paid for according to Article 109.04.

The drilling and setting of soldier piles will be paid for at the contract unit price per cubic meter (cubic foot) for DRILLING AND SETTING SOLDIER PILES. The required shaft excavation, soldier pile encasement concrete and any CLSM backfill required around each soldier pile will not be paid for separately but shall be included in this item.

The timber lagging will be paid for at the contract unit price per square meter (square foot) for UNTREATED TIMBER LAGGING, or TREATED TIMBER LAGGING as detailed on the plans.

The secant lagging will be paid for at the contract unit price per cubic meter (cubic foot) for SECANT LAGGING. The required shaft excavation and CLSM backfill required to fill that excavation shall be included in this item.

Obstruction mitigation shall be paid for according to Article 109.04.

WATER MAIN
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WATER MAIN SPECIAL PROVISIONS

PERMITS

The Contractor is hereby notified that no work shall begin until permits have been secured from the IEPA. The Contractor shall be responsible for completing all work in accordance with the requirement set forth in the permit, as well as the provisions of this contract.

DUCTILE IRON WATER MAIN, CLASS 52, WITH POLYETHYLENE ENCASEMENT

This work shall consist of the construction of ductile iron water main of the size indicated on the plans. The water main shall be "Ductile Iron," ANSI thickness Class 52, Clow "Super Bell-Tite", "Push-On" Joint, or approved equal, and must meet all applicable requirements of ANSI A21.51 (AWWA C151-76)[pipe], ANSI A21.10 (AWWA C110) or (AWWA C153)[fittings], ANSI A21.11 (AWWA C111)[joints], and ANSI A21.4 (AWWA C104)[pipe lining] specifications. Alloyed steel bolts shall be used to prevent corrosion. All water mains shall be wrapped in 8-mil thick polyethylene encasement (ANSI/AWWA C105/A21.5), Method B, with pipe and joints wrapped separately.

All fittings shall be made from gray-iron or ductile iron and furnished with mechanical joint ends. All fittings shall have a pressure rating of 250 psi and shall be wrapped with an 8-mil thick polyethylene material per AWWA standard C105. At locations indicated on the plans or as *directed by the engineer*, the water main shall be constructed around existing utility structures or other obstacles by use of tees, bends or other appropriate fittings. Gasket material identical to that described above shall be utilized at all joints and fittings.

All water main shall be pressure tested and disinfected according to Sections 41.13 and 41.14 of the Standard Specifications for Water and Sewer Main Construction in Illinois May 1996 Edition. The cost for testing and disinfecting the water main will not be paid for separately, but shall be considered incidental to the cost of the water main installed.

Measurement shall be made along the centerline of water main installed. The cost for furnishing all labor, materials and equipment necessary for excavation, construction of the new water main, fittings, backfilling, and all materials and labor required for wrapping the water main will be paid for at the contract unit price per FOOT for DUCTILE IRON WATER MAIN, CLASS 52, WITH POLYETHYLENE ENCASEMENT of the size indicated on the plans.

MECHANICAL JOINT RESTRAINTS

All mechanical joint restraints shall be incorporated in the design of a follower gland. The gland shall be manufactured of ductile iron conforming to ASTM A 536. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to AWWA C111 and C153.

The restraint mechanism shall consist of numerous individually activated gripping surfaces to maximize restraint capability. The gripping surfaces shall be sedges designed to spread the bearing surfaces on the pipe. Twist-off nuts, sized same as tee-head bolts, shall be used to insure proper actuating of restraining devices. When the nut is sheared off, a standard hex nut shall

remain. The mechanical joint restraint device for ductile iron pipe shall have a working pressure of at least 250 psi with a minimum safety factor of 2.

The mechanical joint restraint devices shall be EBBA Iron, Inc. Megalug 1100 series, Uni-flange series 1400, or Engineer-approved equal.

Joint restraint for ductile iron pipe within casing shall be Field Lok 350, For Tyton joint pipe and fittings, TR flex pipe and fittings, or other Engineer-approved equal. Restrained ductile iron pipe shall be rated for 350 psi in accordance with ANSI/AWWA C111/A21.11 *Rubber-Gasket Joints for Ductile Iron Pipe and Fittings*.

All design associated with mechanical joint restraints shall be completed by the contractor and his supplier. Two copies of the design calculations shall be submitted by the contractor or his supplier and approved by the Engineer prior to construction. The cost for designing, furnishing, installing, adjusting, and testing of mechanical joint restraints will not be compensated for separately but shall be considered incidental to the contract.

TAPPING VALVES AND SLEEVES

All proposed valves and sleeves shall be resilient wedge type abiding to AWWA C509 and AWWA C550. All valves shall be Mueller or an approved equal as determined by the owner of the affected water main.

This work shall be paid for at the contract unit price per EACH for TAPPING VALVES AND SLEEVES of the size indicated on the plans, which payment shall include full compensation for furnishing labor, materials and equipment, complete, in place and accepted, and for all materials necessary to complete the work as shown on the plans and specified herein.

VALVE VAULTS, TYPE A, TYPE 1 FRAME, CLOSED LID

A valve vault shall be installed at the location indicated in the plans or as directed by the Engineer. Valves shall be centered directly under the vault lid opening unless otherwise approved by the Engineer. All vaults shall be Type A precast concrete structures with a flat roof, and be forty eight inches (48") or sixty inches (60") in diameter as specified on the plans. All vaults shall be provided with a heavy duty Type 1 frame and closed lid. The lid shall have and "WATER" cast in the lid.

This work shall be paid for at the contract unit price per EACH for VALVE VAULTS, TYPE A, TYPE 1 FRAME, CLOSED LID of the size indicated on the plans, which payment shall include full compensation for furnishing labor, materials and equipment, complete, in place and accepted, and for all materials necessary to complete the work as shown on the plans and specified herein.

FIRE HYDRANT WITH AUXILIARY VALVE AND VALVE BOX

This work shall consist of the installation of new hydrants, auxiliary valves, valve boxes, tees and fittings at the locations indicated in the plans or as directed by the engineer. Hydrants shall be as manufactured by East Jordan iron works, or equal as approved by the Village of East Hazel Crest.

All hydrants shall be painted as directed by the Village of East Hazel Crest. All work shall be in accordance with the Division II Technical Specifications of this contract. The cost for this work will be paid for at the contract unit price bid per EACH for FIRE HYDRANT WITH AUXILIARY VALVE AND VALVE BOX.

FIRE HYDRANTS TO BE REMOVED

The fire hydrant to be removed including the 6" auxiliary valve and tee shall remain the property of the Village of East Hazel Crest and shall be delivered to the Village of East Hazel Crest Public Works Department.

The cost for this work shall be paid for at the contract unit price per EACH for FIRE HYDRANTS TO BE REMOVED.

STEEL SLEEVE OPEN CUT

This work shall consist of furnishing spiral welded, steel casing of the thickness and of the outer diameter specified on the plans or as directed by the Engineer. The sleeve shall meet ASTM A139 and ANSI/AWWA C200, Grade B, minimum yield strength of 35,000 psi and the exterior shall have a coal-tar enamel coating with a minimum thickness of 10 mils in accordance with AWWA C203. Sleeves shall extend at least ten feet (10') beyond the outer edge of the existing pavement or sewer pipe, as indicated in the detail drawings, unless otherwise approved by the Engineer. All work shall be done in accordance with Section 552 of the Standard Specifications.

After installation of the steel sleeve is completed, the proposed water main shall be constructed in place within the sleeve. The water main shall be inserted and centered by use of model CCS stainless steel casing spacers as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal at a maximum spacing of 10 feet. Casing spacers shall be bolt on style with a two-piece shell made from T-304 stainless steel of a minimum 14-gauge thickness. Each shell section shall have bolt flanges formed with ribs for added strength. Each connecting flange shall have a minimum of three 5/16" T-304 bolts. The shell shall be lined with a ribbed PVC extrusion with a retaining section that overlaps the edge of the shell and prevents slippage. Bearing surfaces (runners) made from UHMW polymer with a static coefficient of friction of 0.11-0.13 shall be attached to support structures (risers) at appropriate positions to properly support the carrier within the casing and to ease installation. The runners shall be attached mechanically by T-304 threaded fasteners inserted through the punched riser section and TIG welded for strength. Risers shall be made of T-304 14 gauge stainless steel. All risers over two inches (2") in height shall be reinforced. Risers shall be MIG welded to the shell. All metal surfaces shall be fully passivated. The ends of the sleeve shall be sealed using a method approved by the Engineer.

All annular space shall be filled with blown-in pea gravel or grout as approved by the Engineer. The cost for casing spacers, filling of the annular space, furnishing and installing the steel sleeve shall be incidental to the contract unit price for the steel sleeve.

The cost of furnishing and installation of the steel sleeve, and all incidental work necessary for its installation, including casing spacers, will be paid for at the contract unit price per FOOT for 20" STEEL SLEEVE (0.344" THICKNESS) OPEN CUT, per FOOT for 30" STEEL SLEEVE (0.563" THICKNESS) OPEN CUT, and per FOOT for 42" STEEL SLEEVE (0.625"

THICKNESS) OPEN CUT. The cost for water main constructed within the sleeves will be paid for at its unit price.

STEEL SLEEVES AUGURED

All work shall be performed in accordance with Section 552 of the Standard Specification except as described in the following specifications and the Steel Sleeve Specification contained herein.

This work shall consist of auguring a steel sleeve at the location and at the line and grades provided on the plans or as where directed by the Engineer. The Contractor shall field verify the elevations and locations of any and all utilities that may cross beneath or over the proposed augur prior to ordering structures [manholes] or beginning the augur operation so as to not damage the existing utilities during augur operations. No additional compensation shall be given for any modifications required to be made to the proposed water transmission line design (including but not limited to re-ordering/restocking structures) or for any delay time incurred due to a difference in assumed and actual elevations of the existing utilities.

The Contractor shall take all necessary precautions to prevent the undermining of roadways, structures, embankments, or property including the utilization of trench boxes, sheeting, etc. to properly maintain the augur and receiving pit excavations such that underlying soils between the pavement edge etc. and augur limits are prevented from entering the excavation. In the event that settlement or any other damage occurs to adjacent roadways, property or structures between the time the auguring is completed and the end of the contract bond guaranty period, the Contractor shall be fully responsible for any repairs deemed necessary by the Engineer.

Jacking pits shall be back filled with CA-6. The cost for furnishing, placing, removing and disposing of excess aggregate will not be compensated for separately but shall be considered incidental to the contract.

The cost for excavating, shoring and backfilling of the augur pit and receiving pit including dewatering (if necessary) and stabilization, and installing the steel sleeve shall be considered incidental to the contract unit price for the steel sleeve augur.

The cost of furnishing and installation of the steel sleeve, and all incidental work necessary for its installation, including casing spacers, will be paid for at the contract unit price per FOOT for 20" STEEL SLEEVE, 0.344" THICKNESS AUGURED. The cost for water main constructed within the sleeves will be paid for at its unit price.

WATER SERVICE CONNECTION (SHORT)

This work shall include but not be limited to a new one-inch (1") copper water service connection from the new main and new corporation stop to the limits shown on the plans. All necessary fittings, excavation, bedding, and trench backfill with CA-10 as required within the installation limits required for this connection shall also be included. Services shall be copper with no couplings other than for curb stops. All material shall be as approved by the Village's Public Works Department.

The above-described work shall be paid for at the unit price bid per EACH for WATER SERVICE CONNECTION (SHORT). Trench backfill for these services shall be incidental to this item.

WATER MAIN REMOVAL
VALVE VAULTS TO BE REMOVED
VALVE BOXES TO BE REMOVED
CUT AND CAP EXISTING WATER MAIN

This work shall include but not limited to the removal of existing valve vaults, valve boxes and water main of the size and locations indicated on the plans to the satisfaction of the Engineer. The existing water main shall be cut and capped at the locations shown on the plans. The furnishing and installation of mechanical joints or push on restrained plugs shall be included. All trenches created from the removal of these items shall be backfilled with FA-6 where any load bearing surfaces are proposed.

This work shall be paid for at the contract unit price per FOOT for WATER MAIN REMOVAL of the size indicated on the plans, per EACH for VALVE VAULTS TO BE REMOVED, per EACH for VALVE BOXES TO BE REMOVED, and per EACH for CUT AND CAP EXISTING WATER MAIN, which payment shall include full compensation for furnishing labor, materials and equipment, complete, in place and accepted, backfill, and for all materials necessary to complete the work as shown on the plans and specified herein.

VILLAGE OF HOMEWOOD 24" WATER MAIN ADJUSTMENT

This item shall include the adjustment of the 24-inch water main, which is the main transmission line for the Village of Homewood. Because of the lowered roadway profile, the water main will need to be adjusted accordingly. The new section of water main shall be installed parallel to the existing location. Once installation is substantially complete, the Village of Homewood will shut down the existing water main so the new section of water main can be connected using cut in tees and fittings. Chlorination will be under the direction of the Village of Homewood Water Department. The existing water main cannot be shut down for an extended period of time; therefore the connection must be expedited in every manner possible.

The new section of water main shall be placed in a steel sleeve that will be open cut across the proposed roadway. The steel sleeve shall extend at least 10 feet beyond both the edge of the road. The top of the water main shall be at least 5 feet below the proposed roadway profile. area between the top of the steel sleeve and the bottom of the proposed elliptical culvert pipe.

This work shall be paid for at the contract unit price per FOOT for DUCTILE IRON WATER MAIN, 24" CLASS 52, WITH POLYETHYLENE ENCASEMENT, which payment shall include the cost for furnishing all labor, materials and equipment necessary for excavation, construction of the new water main, fittings, cut-in tees, backfilling, and all materials and labor required for wrapping the water main. The existing parallel 24" water main removal shall be paid for at the contract unit price per FOOT for WATER MAIN REMOVAL, 24".

LIGHTING

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LIGHTING SPECIAL PROVISIONS

SCOPE

This scope of this work is proposed in conjunction with the proposed street-widening project for 171st St., between Wood Street and Ashland Avenue in the Village of East Hazel Crest. This work shall consist of the construction of a new street lighting system and underpass lighting system along 171st street, and the removal / relocation of existing lighting for the Metra parking lot just south of Park and 171st. Roadway lighting shall comply to ANSI. I.E.S. – RP8 and N.E.C. 2002 handbooks, in addition to I.D.O.T. Standards. All standard IDOT pay items shall be paid according to the 2002 Standard Specifications for Road and Bridge Construction adopted January 1, 2002 unless and otherwise modified by in the Special Provisions. All other items not standard IDOT pay items shall be paid for in accordance with the special provisions set forth in this document at the end of this section. All electrical items and materials shall be UL listed. All existing poles to be removed / relocated have been marked on the plans. The Contractor shall rewire relocated poles into their original systems. All foundations, cabling, etc. from removed / relocated poles shall be removed by the Contractor and disposed of properly. New light poles and luminaires shall be installed in accordance with the contract plans. The new systems shall be tested by the contractor and inspected in the presence of the Engineer and / or State or Local representative. Pending final acceptance the contractor shall remain responsible for the systems operation, maintenance and energy cost. After final acceptance, the Village of East Hazel Crest shall assume responsibility of the operation, maintenance and energy cost for the new street lighting, and Cook County shall assume responsibility of operation, maintenance and energy cost for the underpass lighting. There is no provision for temporary lighting in this contract.

UTILITY LOCATIONS

It shall be the responsibility of the contractor to contact all utility companies, cable companies and the Village of East Hazel Crest Public Works Department for locations of such items prior to construction. The Contractor shall be solely responsible for the cost of repair for any utility damages that were properly marked by the respective utility owners.

SAW CUT JOINTS

The removal and/or replacement of any driveways, pavement, curb, sidewalk, etc. shall be accomplished by means of a saw cut joint, at the direction of the Engineer. This work shall not be paid for separately, but will be included in the unit price bid for the various items.

ELECTRIC UTILITY SERVICE CONNECTION

1. DESCRIPTION:

This item shall comply to Section 804 and as modified herein. This item shall consist of work to be performed by Commonwealth Edison Company in providing or modifying electric service as indicated. **THIS MAY INVOLVE WORK AT MORE THAN ONE ELECTRIC SERVICE.**

2. COORDINATION:

It shall be the Contractor's responsibility to contact the utility. The Contractor shall

coordinate his work fully with the electric utility both as to the work required and the timing of the installation. No additional compensation will be granted under this or any other item for extra work caused by failure to meet this requirement.

The Contractor should make particular note of the need for the earliest attention to arrangements with the utility for service. In the event of delay by the utility, no extension of time will be considered applicable for the delay unless the Contractor can produce written evidence of a request for electric service within 30 days of award.

3. METHOD OF PAYMENT:

3.1 The Contractor will be reimbursed by this Contract to the exact amount of money as billed by Commonwealth Edison Company for their services. Work provided by the Contractor for electric service shall be paid separately as described under ELECTRIC SERVICE INSTALLATION. No extra compensation shall be paid to the Contractor for any incidental materials and labor required to fulfill the requirements as shown on the plans and specified herein.

3.2 For bidding purposes, this item shall be estimated as \$5,000.00.

4. BASIS OF PAYMENT:

This item will be paid for at the contract LUMP SUM price for ELECTRIC UTILITY SERVICE CONNECTION, which shall be reimbursed in full for electricity utility service charges.

GROUND ROD

1. DESCRIPTION:

This item shall comply to Section 804 and as modified herein. This item shall consist of furnishing, installing and connecting ground rods for the grounding of service neutral conductors and for supplementing the equipment grounding system via connection at poles or other equipment throughout the system. All materials and work shall be in accordance with Article 250 of the NEC.

2. MATERIALS:

2.1 Unless otherwise indicated, ground rods shall be UL listed, one-piece copper-clad steel rods not less than 5/8-inch in diameter and 10 feet long.

2.2 Unless otherwise indicated, all connections to ground rods, structural steel or fencing shall be made with exothermic welds. Where such connections are made to insulated conductors, the connection shall be wrapped with at least 4 layers of electrical tape extended six inches onto the conductor insulation.

3. INSTALLATION:

3.1 Unless otherwise indicated, ground rods shall be driven so that the tops of the

rods are 24 inches below finished grade. Where indicated, ground wells shall be included to permit access to the rod connections.

- 3.2 Ground rods shall not be installed through concrete foundations.
- 3.3 Where a ground field of "made" electrodes is provided, such as at control cabinets, the exact locations of the rods shall be documented by dimensioned drawings as part of the Record Drawings.
- 3.4 Ground rod connection shall be made by exothermic welds. Ground wire for connection to foundation steel or as otherwise indicated shall be stranded uncoated bare copper in accordance the applicable requirements of ASTM Designation B-3 and ASTM Designation B-8. Unless otherwise indicated, the wire shall not be less than No. 4.
- 3.5 Where connections are made to epoxy coated reinforcing steel, the epoxy coating shall be sufficiently removed to facilitate the exothermic weld.

4. MEASUREMENT:

Unless otherwise indicated, ground rods shall be counted per each. Ground wires and connection of ground rods at poles shall be incidental to this pay item.

5. BASIS OF PAYMENT:

This item shall be paid at the contract unit price EACH for GROUND ROD, of the diameter and length indicated which shall be payment in full for the material and work described herein.

LIGHT POLE FOUNDATION, 24" DIAMETER, OFFSET

1. DESCRIPTION:

- 1.1 This item shall comply to Section 804 and as modified herein. This term shall consist of the construction of a steel reinforced concrete offset foundation, 24 inches in diameter, with offset construction as indicated and complete with raceways, all as indicated on the Contract drawings.
- 1.2 The Engineer shall identify the soil as belonging to one of the types of soil listed in the Foundation Depth Table, either by visual inspection, or by the use of a pocket penetrometer, where this is feasible.
- 1.3 The foundation shall include an excavation, reinforcement, concrete, anchor bolts, nuts, washers, raceways, removal of debris and resurface ground level to its original condition..

2. MATERIALS:

- 2.1 Concrete shall be Class SI complying with Article 836 of the Standard Specifications.

- 2.2 Epoxy coated reinforcement bars shall comply with Article 512 of the Standard Specifications.
- 2.3 Unless otherwise indicated, anchor bolts shall comply with the requirements of ASTM Designation A687. Unless otherwise indicated, nuts shall be hexagon nuts in conformance with ASTM A563, Grade A, and washers shall be in conformance with ASTM F436.
- 2.4 The entire length of the anchor bolts as well as the nuts and washers shall be hot dip galvanized in accordance with the requirements of ASTM Designation A153.
- 2.5 Unless otherwise indicated, conduit raceways shall be heavy wall rigid polyvinylchloride (PVC) conduit, (Schedule 40) UL listed and in conformance with NEMA TC2 and Federal Specification WC-1094A. Raceways shall be of the number and size as indicated.

3. CONSTRUCTION REQUIREMENTS:

- 3.1 The foundation depths shall be as directed by the Engineer based upon evaluation of the soil conditions encountered. The Engineer may determine soil condition by visual inspection or, where practical, by the use of a pocket penetrometer and will establish foundation depth based upon the Foundation Depth Table shown on the plans, where applicable.
- 3.2 The hole for the foundation shall be made by drilling with an auger, of the same diameter as the foundation. The foundation shall be cast-in-place and allowed to cure for 10 days minimum before the light pole is erected. If soil conditions require the use of a liner to form the hole, the liner shall be withdrawn as the concrete is deposited. The top of the foundation shall be constructed level so that no shims or other leveling device will be needed to set the light standard plumb on the foundation. A liner or form shall be used to produce a uniform smooth side to the top of foundation. Foundation top shall be chamfered $\frac{3}{4}$ -inch unless otherwise indicated.
- 3.3 Extreme care shall be used in establishing the top elevation of concrete foundations, especially when foundations are installed before final grading is complete. Foundations shall not protrude above grade more than the limits indicated on the plans, except for specifically indicated locations, and where not otherwise indicated, foundation shall not protrude above grade more than 4 inches above a 60-inch chord centered at the foundation, at any point around the circumference. Where foundation heights extend beyond specified limits, the Engineer may direct replacement of the foundation and the incorrect foundation will not be measured for payment.
- 3.4 The steel reinforcement, the raceway conduits and the anchor bolts shall be secured in place to each other and properly positioned in the augered holes so that at time of pouring of concrete mixture in place the above-said components retain their proper positions. Special attention shall be paid to the positioning of the anchor bolts. It is of utmost importance that the anchor bolt projections on top of the foundation, after placement of the concrete, remain in a vertical

position.

4. METHOD OF MEASUREMENT:

The foundation shall be measured for payment in linear feet of foundation in place, with the measurement to be taken along the vertical and horizontal centerlines of the foundation except that the total depth shall be not greater than indicated on the Plans and directed by the Engineer, i.e. extra foundation depth, set.

5. BASIS OF PAYMENT:

This work will be paid for at the contract unit price per lineal foot for LIGHT POLE FOUNDATION, 24" DIAMETER, OFFSET, of the diameter indicated, which shall be payment in full for the work as shown on the Drawings and described herein.

LIGHT POLE, ALUMINUM, WITH TWIN MAST ARMS

1. DESCRIPTION:

1.1 This item shall comply to Section 804 and as modified herein. This item shall consist of furnishing and installing a conventional-type round tapered, UL listed aluminum pole complete with twin mast arms and all required hardware including bolt covers and nut protectors as specified in Section 830.

1.2 Contractor shall use IDOT standard, Article 1069 for light poles.

2. BASIS OF PAYMENT:

This item shall be paid for at the contract unit price each for LIGHT POLE, ALUMINUM, 35 FT. M.H., TWIN 8 FT. MAST ARMS, which shall be payment in full for the work as shown on the drawings and described herein.

REMOVAL OF EXISTING LIGHTING SYSTEM, NO SALVAGE

1. DESCRIPTION:

This item shall comply to Section 804 and as modified herein. This pay item shall consist of the removal and disposal of the existing functional / non-functional underpass lighting fixtures, controllers, and any and all other related materials shall be carefully removed from the walls of the bridges and pedestrian walkways and disposed of in accordance with any and lighting fixtures in a safe and environmentally sound manner. Any live wires shall be properly terminated for safety.

2. BASIS OF PAYMENT:

This item shall be paid at the contract unit price LUMP SUM for REMOVE EXISTING LIGHTING SYSTEM, NO SALVAGE, which shall be payment in full for the work described herein.

GENERAL ELECTRICAL REQUIREMENTS

Effective: March 1, 2003

Add the following to Article 801 of the Standard Specifications:

“Maintenance transfer and Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall request a maintenance transfer and preconstruction site inspection, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance transfer and preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date. The maintenance transfer and preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the State. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least 304.8 mm (one (1) foot) to either side.. The request for the cable locations and marking shall be made at the same time the request for the maintenance transfer and preconstruction inspection is made. The Contractor shall exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. NOTE THAT THE CONTRACTOR SHALL BE ENTITLED TO ONLY ONE REQUEST FOR LOCATION MARKING OF EXISTING SYSTEMS AND THAT MULTIPLE REQUESTS MAY ONLY BE HONORED AT THE CONTRACTOR'S EXPENSE. NO LOCATES WILL BE MADE AFTER MAINTENANCE IS TRANSFERRED, UNLESS IT IS AT THE CONTRACTOR'S EXPENSE.

Condition of Existing Systems. The Contractor shall conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings shall be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data shall be reviewed with and approved by the Engineer and a record of the inventory shall be submitted to the Engineer for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction shall be returned at the end of construction in complete, fully operating condition.”

Delete the last paragraph of Article 801.06 of the Standard Specifications.

Revise the 7th and 8th paragraphs of Article 801.08 of the Standard Specifications to read:

“Engineer's Stamp. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as ‘Approved’, ‘Approved-As-Noted’, ‘Disapproved’, or ‘Information Only’. Since the Engineer's review is for conformance with the design concept only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.

Resubmittals. All submitted items reviewed and marked ‘APPROVED AS NOTED’, or ‘DISAPPROVED’ are to be resubmitted in their entirety with a disposition of previous comments to verify contract compliance at no additional cost to the state unless otherwise indicated within the submittal comments.”

Revise Article 801.12 of the Standard Specifications to read:

“Lighting Operation and Maintenance Responsibility. The scope of work shall include the assumption of responsibility for the continuing operation and maintenance the of existing, proposed, temporary, sign and navigation lighting, or other lighting systems and all appurtenances affected by the work as specified elsewhere herein.”

Add the following to Section 801.12 of the Standard Specifications:

"Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Engineer duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner's expense and lighting systems shall not be kept in operation during long daytime periods at the Owner's expense. Upon written authorization from the Engineer to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility shall be the responsibility of the Contractor until final acceptance."

Add the following to Section 801 of the Standard Specifications:

"Splicing of Lighting cables. Splices above grade, such as in poles and junction boxes, shall have a waterproof sealant and a heat-shrinkable plastic cap. The cap shall be of a size suitable for the splice and shall have a factory-applied sealant within. Additional seal of the splice shall be assured by the application of sealant tape or the use of a sealant insert prior to the installation of the cap. Either method shall be assured compatible with the cap sealant. Tape sealant shall be applied in not less than one half-lapped layer for a length at least 6.35 mm (1/4-inch) longer than the cap length and the tape shall also be wrapped into the crotch of the splice. Insert sealant shall be placed between the wires of the splice and shall be positioned to line up flush or extend slightly past the open base of the cap.

Lighting Cable Identification. Each wire installed shall be identified with its complete circuit number at each termination, splice, junction box or other location where the wire is accessible.

Lighting Cable Fuse Installation. Standard fuse holders shall be used on non-frangible (non-breakaway) light pole installations and quick-disconnect fuse holders shall be used on frangible (breakaway) light pole installations. Wires shall be carefully stripped only as far as needed for connection to the device. Over-stripping shall be avoided. An oxide inhibiting lubricant shall be applied to the wire for minimum connection resistance before the terminals are crimped-on. Crimping shall be performed in accordance with the fuse holder manufacturer's recommendations. The exposed metal connecting portion of the assembly shall be taped with two half-lapped wraps of electrical tape and then covered by the specified insulating boot.

The fuse holder shall be installed such that the fuse side is connected to the pole wire (load side) and the receptacle side of the holder is connected to the line side.

Grounding of Lighting Systems. All electrical systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC, even though every detail of the requirements is not specified or shown. Good ground continuity throughout the electrical system shall be assured. All electrical circuit runs shall have a continuous equipment grounding conductor. **IN NO CASE SHALL THE EARTH BE CONSIDERED AS AN ADEQUATE EQUIPMENT GROUNDING PATH.** Where connections are made to painted surfaces, the paint shall be scraped to fully expose metal at the connection point and serrated connectors or washers shall be used. Where metallic conduit is utilized as the equipment grounding conductor, extreme care shall be exercised to assure continuity at joints and termination points. No wiring run shall be installed without a suitable equipment ground conductor. Where no equipment ground conductor is provided for in the plans and associated specified pay item, the Contractor is obligated to bring the case to the attention of the Engineer who will direct the Contractor accordingly. Work which is extra to the contract will be paid extra. All connections to ground rods, structural steel, reinforcing steel or fencing shall be made with exothermic welds. Where such connections are made to insulated conductors, the connection shall be wrapped with at least 4 layers of electrical tape extended 152.4 mm (six inches) onto the conductor insulation. Where a ground field of "made" electrodes is provided, the exact locations of the rods shall be documented by dimensioned drawings as part of the Record Drawings. Equipment ground wires shall be bonded, using a splice and pigtail connection, to all boxes and other metallic enclosures throughout the wiring system.

Lighting Unit Identification. Each pole, light tower and underpass light shall be labeled as indicated in the plans to correspond to actual circuiting, and as designated by the Engineer. They shall be installed by the Contractor on each lighting unit pole shaft and on the underpass walls, or piers, as shown in the details. Median-mounted poles shall have two sets of identification labeling oriented to allow visibility from travel in either direction. Lighting Controllers shall also be identified by means identification decals as described herein. Identification shall be in place prior to placing the equipment in service. Identification of weathering steel poles shall be made by application of letters and numerals as specified herein to an appropriately sized 3.175 mm (1/8-inch) thick stainless steel plate which shall be banded to the pole with two stainless steel bands. Identification of painted poles shall be made by application of letters and numerals as specified herein via an adhesive approved by the paint manufacturer for the application. Identification of luminaires which are not

pole mounted, such as underpass luminaires, shall be done using identification brackets. In general, the brackets shall be mounted adjacent to and within one foot of their respective luminaires. The brackets shall be fabricated from 3.175 mm (one-eighth (1/8)) inch aluminum alloy sheet according to the dimensions shown on the plans. The bracket shall be bent so as to present the luminaire identification numbers at a sixty (60) degree angle to the wall. The bracket shall be attached to concrete walls with three (3) 6.35 mm (1/4 inch), self drilling, snap-off type galvanized steel concrete anchors set flush with the wall, or power driven fasteners approved by the Engineer. The brackets shall be offset from the wall with 12.7 mm (1/2") aluminum bushings. The structural steel shall not be drilled to attach the brackets. The luminaire identification numbers shall be applied to the bracket using the method described for identification applied to poles.

ELECTRIC UTILITY SERVICE CONNECTION

Effective: January 1, 2002

Description. This item shall consist of payment for work performed by the Electric Utility Company in providing or modifying electric service as indicated. THIS MAY INVOLVE WORK AT MORE THAN ONE ELECTRIC SERVICE.

CONSTRUCTION REQUIREMENTS

General. It shall be the Contractor's responsibility to contact the utility. The Contractor shall coordinate his work fully with the electric utility both as to the work required and the timing of the installation. No additional compensation will be granted under this or any other item for extra work caused by failure to meet this requirement.

The Contractor should make particular note of the need for the earliest attention to arrangements with the utility for service. In the event of delay by the utility, no extension of time will be considered applicable for the delay unless the Contractor can produce written evidence of a request for electric service within 30 days of execution.

Method Of Payment. The Contractor will be reimbursed to the exact amount of money as billed by the Electric Utility Company for its services. Work provided by the Contractor for electric service will be paid separately as described under ELECTRIC SERVICE INSTALLATION. No extra compensation shall be paid to the Contractor for any incidental materials and labor required to fulfill the requirements as shown on the plans and specified herein.

For bidding purposes, this item shall be estimated as \$5,000.00.

Basis Of Payment. This work will be paid for at the contract lump sum price for **ELECTRIC UTILITY SERVICE CONNECTION** which shall be reimbursement in full for electric utility service charges.

ELECTRIC SERVICE INSTALLATION

Effective: January 1, 2002

Description. This item shall consist of all material and labor required to extend, connect or modify the electric services, as indicated or specified, which is over and above the work performed by the utility. Unless otherwise indicated, the cost for the utility work, if any, will be reimbursed to the Contractor separately under **ELECTRIC SERVICE CONNECTION**. This item may apply to the work at more than one service location and each will be paid separately.

Materials. Materials shall be according to the following Articles of Section 1000 -
Materials

Item	Article/Section
(a) Electric Service Installation – Lighting	1086.01

CONSTRUCTION REQUIREMENTS

General. The Contractor shall ascertain the work being provided by the electric utility and shall provide all additional material and work required to complete the electric service work in complete compliance with the requirements of the utility.

No additional compensation will be allowed for work required for the electric service, even though not explicitly shown on the Drawings or specified herein

Method Of Measurement. Electric Service Installation shall be counted, each.

Basis Of Payment. This work will be paid for at the contract unit price each for **ELECTRIC SERVICE INSTALLATION** which shall be payment in full for the work specified herein.

GROUND ROD

Effective: January 1, 2002

Description. This item shall consist of furnishing, installing and connecting ground rods for the grounding of service neutral conductors and for supplementing the equipment grounding system via connection at poles or other equipment throughout the system. All materials and work shall be in accordance with Article 250 of the NEC.